INSERT FOR SNOWSHOE BOOTS, BOOTS EQUIPPED WITH THE INSERT, AND PRODUCT LINE OF BOOTS

This invention pertains to an insert for the sole of a snowshoe boot, and more specifically to an insert that runs transversely so that its two ends are positioned on the lateral edges of said sole so as to work with holdings means mounted on the snowshoe. The invention also pertains to the boot(s) equipped with the insert.

The development of modern manufacturing techniques and the desire to ensure optimum user comfort have provided the impetus for many manufacturers to develop specific models of boots that are specially adapted to the sports for which they are intended to be used or to the accessories with which they are designed to work. Thus, in many sports such as skiing, snowshoeing, or bicycling, boot manufacturers have sought to reinforce the sole of the boot or to make it work together with the external attachment means of the accessories associated with these sports.

This approach has also led the manufacturers to place inserts in the soles in order to perform some or all of these various functions. However, boots equipped with these inserts have many disadvantages as regards user comfort, reliability, and service life. These boots also have problems associated with their adaptation to accessories and, in particular, problems associated with the size differences that exist within the same product line of boots.

Thus, the goal of this invention is to correct the drawbacks of these boots using simple, reliable, and easily implemented

means. The invention proposes a new rigid insert that is specially adapted to boot soles and provides maximum comfort for the wearer of the boots while at the same time providing a greater level of safety.

According to its main characteristic, the sole insert for the boot of a snowshoe is characterized by the fact that said insert runs transversely, whereby its two ends are positioned on the lateral edges of said sole, so as to be able to work with holding means that are provided on the snowshoe, while the length of the insert is independent of the size of the boot, whereby it is understood that said insert is designed to be used on at least two different sizes of boots.

According to another characteristic, the boot is of the type that has in its sole an insert whose two ends are located on the lateral edges of said sole and is characterized by the fact that the length of the insert is independent of the size of the boot and is constant for a given boot model, so as to be the same for all sizes.

According to an additional characteristic of the boot of the invention, said boot is characterized by the fact that the ends of the insert have two hollow compartments.

According to another characteristic of the boot of the invention, the insert is positioned on a transverse axis that is orthogonal to the longitudinal axis of travel of the boot.

According to one embodiment of the boot of the invention, said boot is characterized by the fact that the lateral position of the

insert is the same for a given model, regardless of the size of the boot.

According to this embodiment of the boot of the invention, at its lateral edges the sole has protruding or hollow contours on or in which the ends of the insert are located.

According to a variant embodiment of the boot of the invention, said boot is characterized by the fact that the lateral position of the insert varies as a function of size for a given model, whereby the insert is positioned in the front part of the boot at the point where the width of the sole is equal to the length of the insert.

According to a variant embodiment of the boot of the invention, said boot is characterized by the fact that the width of the sole varies in its height and by the fact that the vertical position of the insert varies depending on the size of the boot for a given model.

Moreover, the invention also pertains to a process for manufacturing boots of different sizes of a given boot model, whereby said process is characterized by the fact that it consists in arranging, during a main stage, inside of the boot sole an insert whose length is independent of the size of the boot and is constant for a given model.

The invention also claims protection for a model of boot of the type that includes a transverse insert that is positioned inside the sole, whereby said model is characterized by the fact that the length of the insert is the same for all sizes of boot of said model.

Other characteristics and advantages of the invention will become clear from the description given below in connection with the attached drawings, which are given only by way of non-limiting examples.

Figures 1-9 illustrate the preferred embodiment of the boot of the invention and its variant embodiments.

Figure 1 shows a perspective view of the first embodiment of the boot of the invention.

Figure 2 shows a lateral view of said embodiment.

Figure 3 shows a perspective view of the sole of the boot.

Figure 4 shows a cutaway view in horizontal plane (P) of the sole and its insert.

Figure 5 provides a side view of the insert of the invention.

Figures 6a, 6b, and 6c show the preferred embodiment of the boot according to views similar to those of Figure 4 for three different sizes.

Figures 7a, 7b, and 7c show views similar to those of Figures 6a-6c of a variant embodiment of the boot.

Figures 8a and 8b show cutaway views, in the transverse plane of the insert, of a variant embodiment of the boot for two different sizes.

Figure 9 shows a perspective view of the boot of the invention attached to a snowshoe.

According to the invention, the boot to which general reference (1) refers is of the type that comprises an insert (2) that is positioned in its sole (3). Said insert advantageously runs transversely and ends (4) on both sides of boot (1) on the

lateral edges (3a, 3b) of sole (3), as Figures 1, 3, and 4 show. The insert is advantageously made of a rigid material and at its ends features attachment means (MAC) whose shape complements that of holdings means (101) that are arranged on a snowshoe (100) in order to make it possible to attach boot (1) to said snowshoe, as Figure 9 shows. According to the preferred embodiment, the boot is mounted so as to pivot on the snowshoe around a transverse axis (Y, Y') in such a way that the user is able to lift his heel as he moves along.

According to the invention, boot (1) comprises an insert (2) whose length (L) is independent of size of the boot and is constant, i.e., is the same for one or more model(s) of given boot(s). Thus, for a given boot model such as, for example, that shown in Figures 1 and 2, insert (2) has a length (L) that is the same for any size (C1, C2, C3,...) of boot. According to the first embodiment of the boot of the invention, whose sole is shown in Figures 6a-6c for three different sizes (C1, C2, C3,...), insert (2) is of the same length (L) regardless of width (d) and length (D) of the sole, i.e., regardless of its height or size. In other words, length (L) of the insert is the same for size (C1), for size (C2), for size (C3), and for all other sizes. Likewise, for the variant embodiment illustrated by Figures 7a-7c, length (L) of insert (2) is kept the same regardless of the size of the boot in question.

According to the preferred embodiment of boot (1) of the invention, insert (2), which is positioned in the sole, is positioned along a transverse axis (YY') that is orthogonal to

longitudinal axis (ZZ') of boot (1) or to the axis of travel, i.e., said two ends (4) are carried on this transverse axis. The insert can be of any type and, in a horizontal plane (P), can be curved in shape, as Figures 4 and 6a-6c show, or straight, as illustrated by Figures 7a-7c. The insert is advantageously flat, as shown in Figure 5, but it could also have a progressive contour, for example, it could be convex in the transverse plane, without thereby exceeding the scope of protection of the invention.

According to the preferred embodiment of insert (1), said insert has a holding element at each of its ends (4), which is designed to work with holding means (101) of snowshoe (100), whereby said element is, for example, a hollow, advantageously cylindrical compartment (5), which is designed to receive an element of mating shape, such as a part of a retractable axis that belongs to snowshoe (100), with which the boot is designed to work. It goes without saying that, according to an embodiment, not shown, the holding elements could be contours that protrude together with, for example, parts of a axis. We should note that, regardless of the holding elements, parts of a axis, cylindrical or other compartments that are used, the latter are advantageously carried by a single transverse axis (YY'). Moreover, the insert advantageously has reinforcing means that are designed to be attached to the holding elements in order to prevent frictional wear and tear of these elements, or at least to reduce such wear and tear. According to the preferred embodiment of the insert, these reinforcing means are small metal dishes, not shown, which are designed to receive the ends of the insert and, more

particularly, the inner walls or bores of axis compartments (5) that form the holding elements.

According to the preferred embodiment of boot (1), the longitudinal position of insert (2) along longitudinal axis ZZ' is the same regardless of length (D) of the boot. Likewise, insert (2) is positioned in the sole in such a way that ratio (H/D) between distance (H), measured between its transverse axis (YY') and the front end of the boot, and length (D) of the boot is the same regardless of the size of the boot, as shown in Figures 6a, 6b, and 6c. Said ratio (H/D) is advantageously between 0.10 and 0.45, so that the insert is positioned in the articulation area of the metatarsals.

Thus, according to the preferred embodiment of boot (1) illustrated in figures 6a-6c, theoretical width (d) of sole (3), measured at insert (2), will be different depending on the height and thus the size of the boot. Thus, when width (d) of the sole is smaller than length (L) of insert (2) for small sizes, sole (3) will have protruding contours (6) or bosses that extend from the edges of sole (3a, 3b) to the ends of the insert, as shown in Figure 6a, so that the insert will be completely trapped in the sole and only its ends will show over the edges of the sole. Likewise, if theoretical width (d) of sole (3) is larger than the height of the insert, as shown in Figure 6c, then lateral edges (3a, 3b) of the sole will have hollow contours (7) in which ends (4) of the insert will be located. It goes without saying that, in the case of the embodiment shown, hollow contours (7) in the shape of dishes or protruding contours (6) of the sole are depicted in an

exaggerated fashion, which is done in order to make it easier to understand this embodiment.

It should be noted that, according to variants that are not shown, the bosses and the hollows are less prominent, such that they merge with the natural shape of the curve of the sole. Moreover, it should be noted that the lateral position of the insert is always the same, whereby height or vertical size (L2) of the bosses of the sole is thus the same on both sides of the boot with respect to the theoretical curve.

According to the preferred embodiment of boot (1), sole (3) has a width that is essentially constant over its entire height (h), as shown in Figure 3, and insert (2) is also always positioned in the sole at a median height in a horizontal plane (P). Nevertheless, according to an embodiment shown in Figures 8a and 8b, the width of the sole could vary in height, for example, by flaring downward. In addition, according to these embodiments, the location of the insert could be different depending on the size of the boot so that in height the insert is positioned at the exact point where the width of the sole corresponds to fixed length (L) of the insert for the boot model in question. Thus, while retaining a precise and identical longitudinal position for the insert with respect to length (D) of the boot, it may not be necessary to make hollow and projecting contours along the lateral edges of the sole. According to this embodiment, the insert is generally positioned higher for the large sizes, while it is shifted downward in the flaring of the sole for smaller sizes, as Figures 8a and 8b show.

According to a variant shown in Figures 7a-7c, insert (2) is a transverse insert of fixed length (L), regardless of the size of the boot. Nevertheless, in order to avoid using bosses or dishes (6, 7) along lateral edges (3a, 3b) of sole (3), the longitudinal position of insert (2) varies as a function of size so that it is always positioned at a point on the sole where actual width (d) of said sole is equal to constant length (L) of the insert. Thus, ratio (H/D), which defines the longitudinal position of insert (2), varies according to the size of boot (1).

It should be noted that, according to the invention, insert (2) is filled throughout with a sole (3), i.e., the insert is completely surrounded by the sole over its entire length (L), and only its ends (4) show over lateral edges (3a, 3b) of sole (3), as Figure 3 shows. It should also be noted that sole (3) or insert (2) may itself be equipped with guiding means, such as a tilted-ramp device so as to guide the axis parts of the holding or attachment device of snowshoe (100).

Of course, insert (2) can also be sandwiched between two layers, thus forming part or all of the sole of the boot.

According to the invention, insert (1) is made of a filled thermoplastic or a composite material to make it rigid and has elevated strength with regard to twisting and bending in particular. It can also be made of metal or any other material that has the characteristics of rigidity, solidity, and strength that are desired for such an insert.

We should note that, according to the preferred embodiment of the invention, the configuration of its holding elements (5) allows

the insert to form a fulcrum pin that makes it possible for the boot to pivot with respect to the snowshoe around transverse axis (YY'), which connects ends (4) of insert (2) because the axis compartments and axis parts of the snowshoe work together. This pivoting can be accomplished by means of threading, whereby the boot is made integral with the accessory in the rear of the boot, for example. We should note that, according to the preferred embodiment, the specific curved shape of the insert advantageously makes it possible to enhance the user's comfort when he rests his weight on the boot.

We should note that, according to the embodiments presented, boot (1) is a boot that is designed for use in mountain sports and includes a rising part (10). Said part encases the user's foot and ankle. Nevertheless, it does not have to be designed this way, and the boot could be a low-rise boot, or any other type of boot without thereby exceeding the framework of protection of the invention.

Moreover, the invention also pertains to a process for manufacturing boots of different sizes of a given model. This process consists in arranging, during a main stage, inside of sole (3) of boot (1), an insert (2) whose length (L) is independent of the size of the boot and is constant for the given model.

This invention also pertains to a product line of boots (1), all sizes of which have an insert (2) of identical length (L) that is arranged transversely in the sole of the boot so that its ends (4) open onto lateral edges (3a, 3b) of said sole.

In other words, the invention pertains to a product line of at least two boots (1) of sizes (C1, C2, C3,...), a first size (C1) and a size (C2) that are different, i.e., whose respective soles are of different lengths (D), while insert (2) is of length (L) that is the same for the first and second sizes.

Of course, the invention is not limited to the embodiments that are described and shown by way of example; rather, it also includes all other technical equivalents, as well as combinations thereof.